

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

January 10, 2012

Precipitation and Snowpack

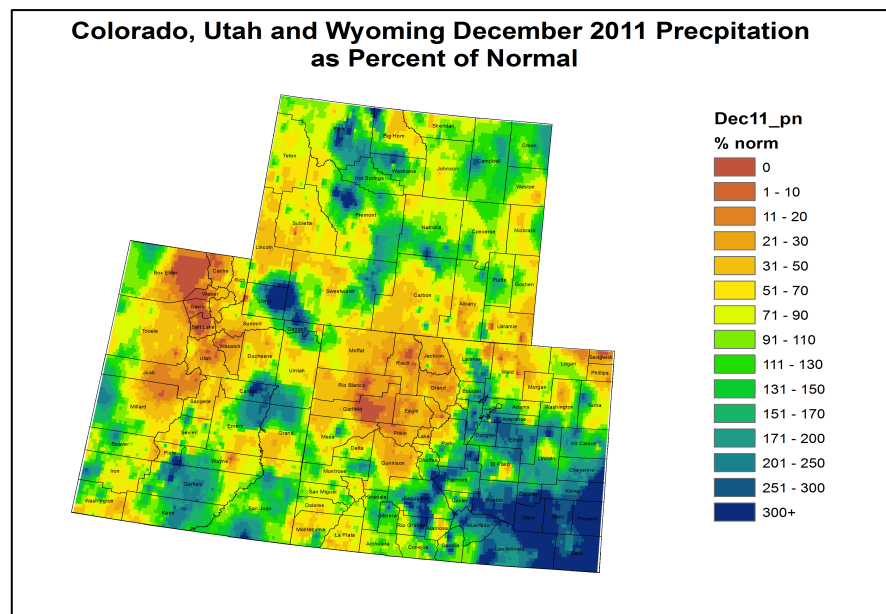


Fig. 1: December precipitation as a percent of average.

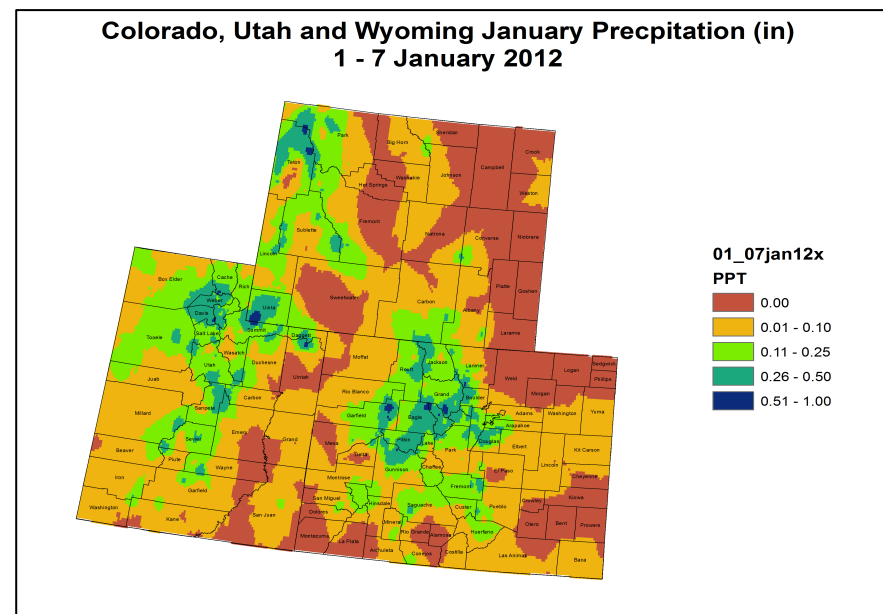


Fig. 2: January 1 – 7 precipitation in inches.

For the month of December, precipitation favored the southern and western portions of the Upper Colorado River Basin (UCRB, Fig. 1). The San Juan mountains and the Four Corners region received around 100% of its average December precipitation. Areas in eastern Utah and southwest Wyoming received over 150% of average precipitation for the month. Northwest Colorado was much drier in December, with most areas receiving less than 50% of average. The drought-stricken southeast CO saw significant improvement, with most of the region receiving over 200% of average precipitation for the month.

Last week, beneficial precipitation fell in the areas most in need—in the northern and central CO mountains and in the Wasatch mountains in UT (Fig. 2). Though any accumulations are welcome, totals were still low (between a tenth and half an inch) and not enough to alleviate the dryness that has intensified over the past month. The northern fringes of the UCRB and the Wet Mountains in southern CO also received between a tenth and half an inch of moisture last week. The rest of the basin and eastern CO were drier for the week, receiving less than a tenth of an inch.

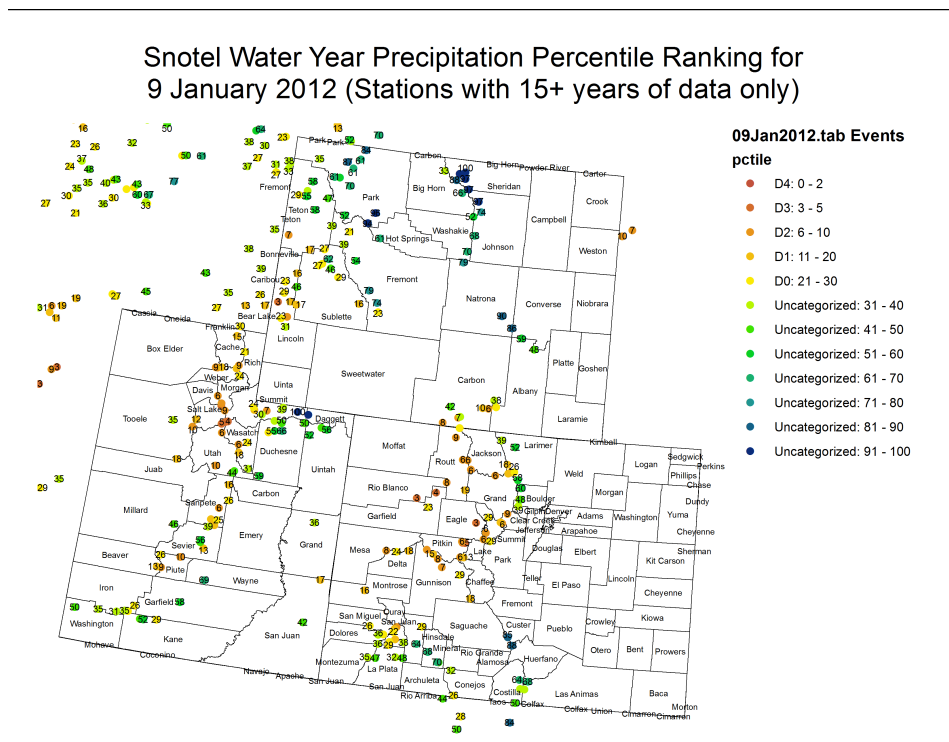


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

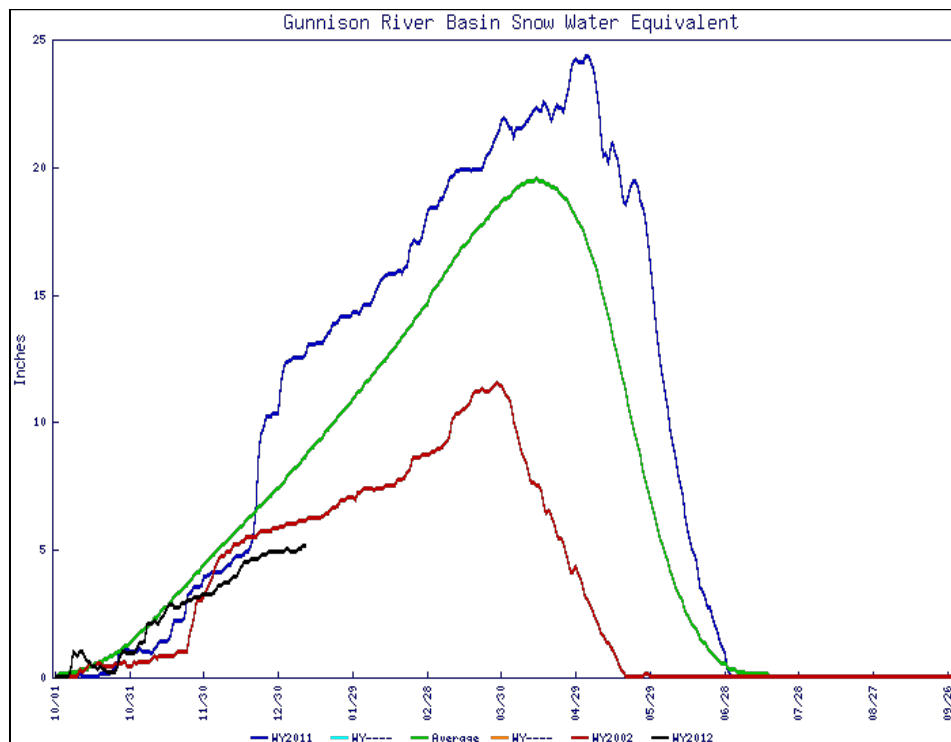


Fig. 4: Gunnison basin WYTD snow water equivalent accumulation (black line) compared to the average (green).

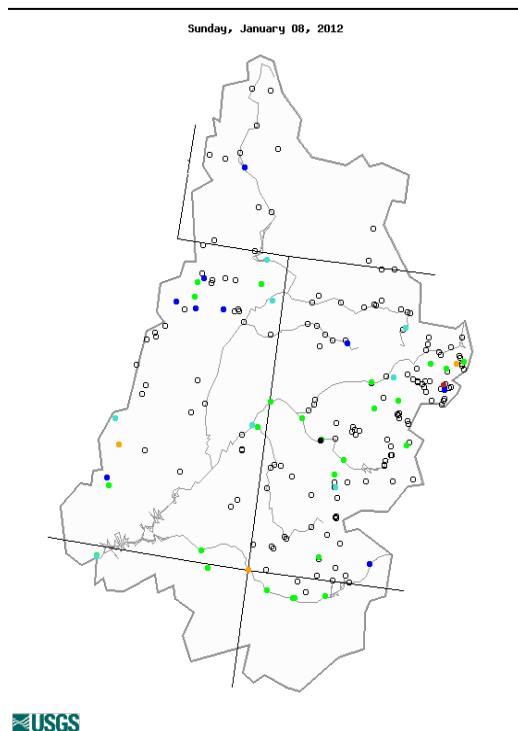
Water-year-to-date (WYTD), SNOTEL precipitation is near average for the southern part of the UCRB and below average for much of the northern portions of the basin (Fig. 3). The lowest percentiles are currently being observed around the Gunnison basin in CO, near the Colorado River headwaters, and along the Wasatch range in UT, with many sites recording below the 20th percentile. The San Juan mountains are seeing more significant snowpack this year, with most sites near or above the 40th percentile. Some sites along the Duchesne River in UT are also maintaining snowpack accumulations near or above the 50th percentile.

Around the Gunnison basin in western CO, very little snow has accumulated since the beginning of December (Fig. 4). With accumulations stagnating, this region (along with many other central and northern regions of the UCRB) is now experiencing below average snowpack. Snowpack accumulations are now currently less than they were at this time during the 2002 drought year.

Streamflow

As of January 8th, 91% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). About 38% of the gages in the basin are recording above normal flows, while 8% of the gages in the basin are recording below normal flows. The number of reporting gages in the basin has decreased from over 100 in mid-November to just below 50, as many portions of the rivers are frozen over. There are currently only 4 gages recording below normal flows with 2 of them located near the Colorado River Headwaters region.

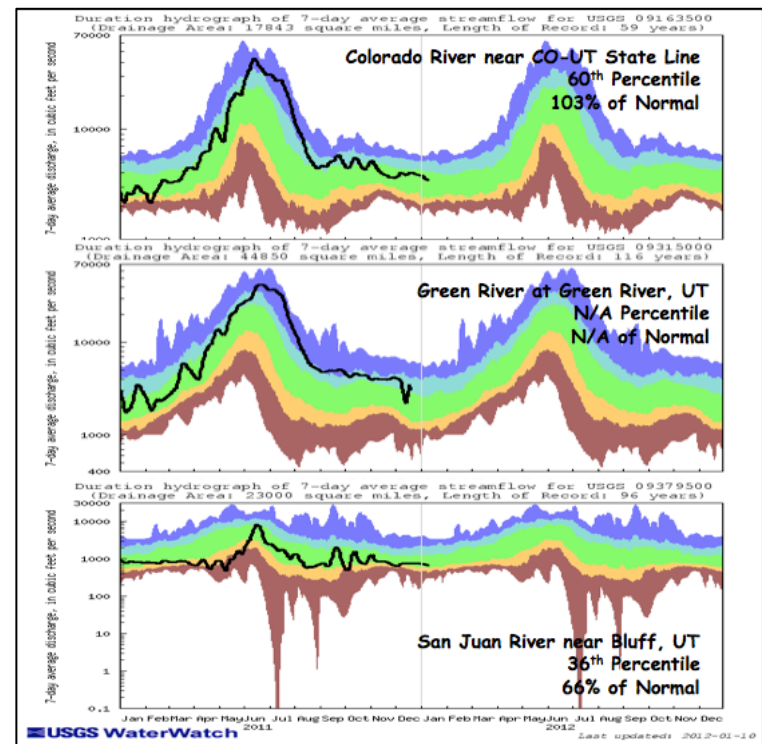
Key gages on the Colorado River at the CO-UT state line and the San Juan River near Bluff, UT are all currently recording flows in the normal range at the 60th and 36th percentiles, respectively (Fig. 6). The gage on the Green River at Green River, UT had been recording above normal flows, but as of last month has become “ice affected” and is not currently recording streamflow.



Explanation - Percentile classes							
●	●	●	●	●	●	●	
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 5: 7-day average discharge compared to historical discharge for January 8th.

Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



Water Supply and Demand

Most of the UCRB and surrounding areas experienced warmer than average temperatures for the first week of the year. The VIC model continues to show dry soil moisture conditions in southeast CO and in UT around the Colorado River valley (Fig. 7). Drying conditions are also showing up in southern WY. After the recent snowfall around the Colorado River headwaters, soil conditions have improved in that area according to the VIC model. Near normal soil moisture conditions are being observed in the Four Corners and San Juan mountains region.

All of the major reservoirs above Lake Powell are above their January averages. Except for Navajo and Lake Granby, all of the major reservoirs in the UCRB are above their storage levels for the same time last year. Flaming Gorge, Granby, Navajo and Dillon stayed near steady for the month of December, while Blue Mesa, Green Mountain, and Lake Powell saw larger decreases. Lake Powell is currently at 65% of capacity and 86% of average.

Precipitation Forecast

The UCRB is currently underneath a high pressure ridge that is shifting to the east while a quick moving upper level disturbance approaches from the northwest. This fast moving system will pass over the northern half of the basin through Wednesday morning; however, the lack of moisture associated with the disturbance will result in relatively minor precipitation amounts. Expect liquid accumulations to remain less than 0.25 inches over the mountains of northern CO and UT with lesser amounts in the valleys and little or no precipitation to the south (Fig. 8). This storm exits the area by Thursday, and a warming trend will begin as high pressure again takes hold of the western US. The ridge will hold strong through the weekend, with the storm track located well to the north in Canada and little or no precipitation around the UCRB. Beyond the weekend, long range forecast models are indicating a slight southward shift in the jet stream along with an increase in moisture transport from the Pacific. At this point it appears that only the northernmost fringes of the basin in WY will have any chance of precipitation while the rest of the region will remain under mostly dry conditions.

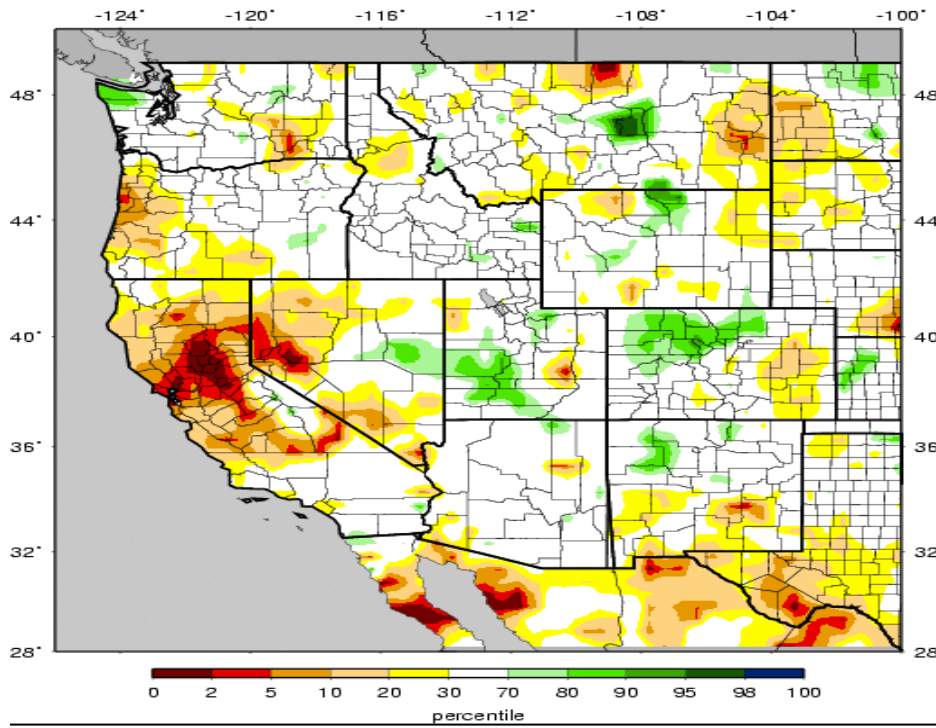


Fig. 7: VIC soil moisture percentiles as of January 8th.

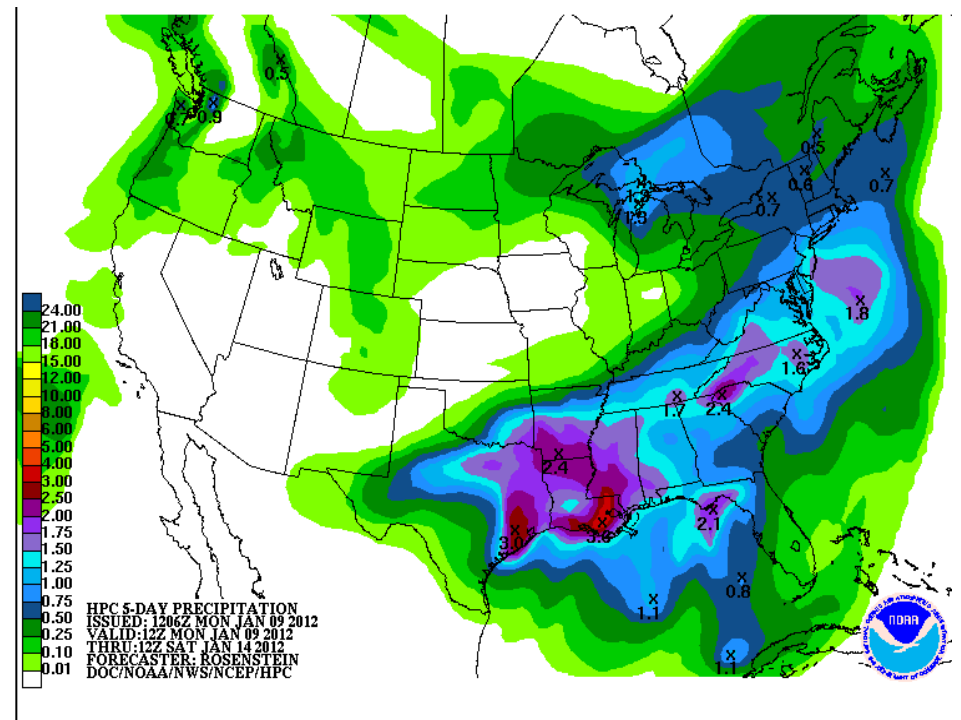


Fig. 8: HPC Quantitative Precipitation Forecast (QPF) through 12Z Saturday.

Drought and Water Discussion

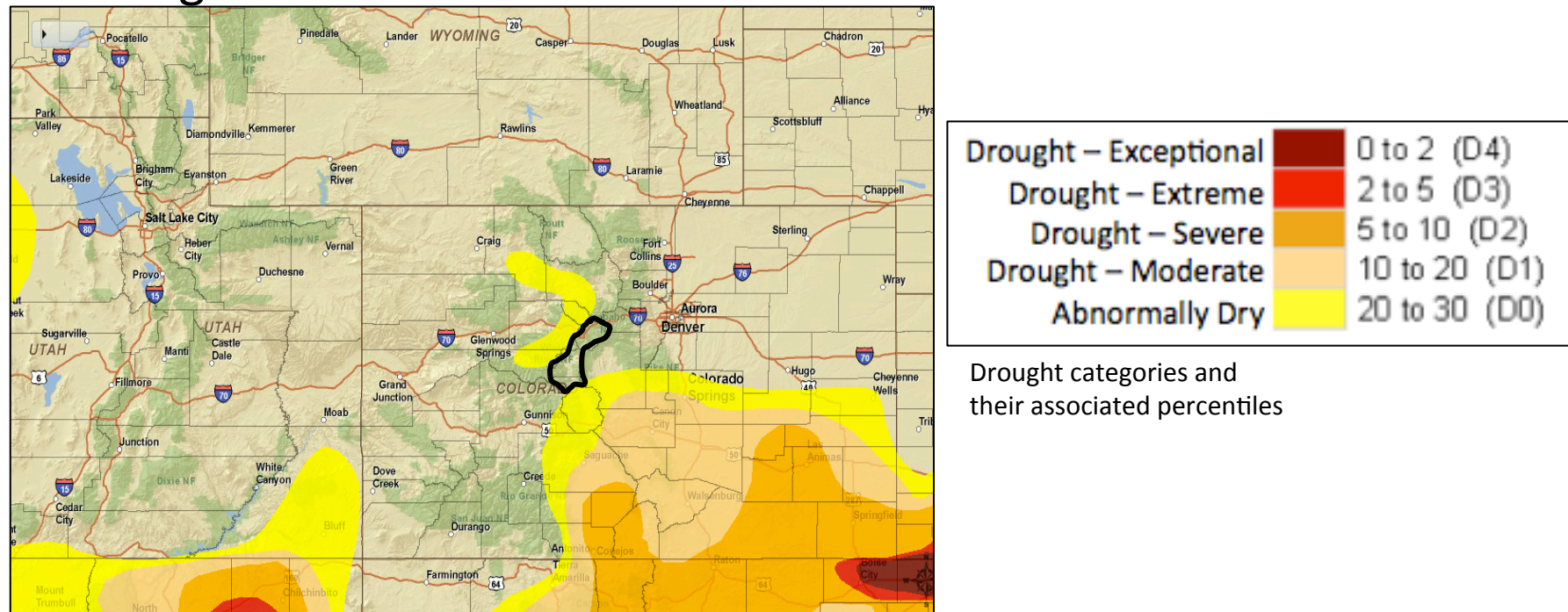


Fig. 9: January 3rd release of U.S. Drought Monitor for the UCRB

Drought categories and their associated percentiles

The current U.S. Drought Monitor (USDM) author has introduced D0 into the northern part of the UCRB. This area includes the lower elevations of southwest WY, the Wasatch range in UT and south along the Green River valley, and across part of the Yampa-White basin in northwest CO. Status quo is recommended for the rest of the UCRB.

East of the basin, it is recommended that D0 be expanded to cover the rest of Lake County and Chaffee County due to short-term dryness in that region. This will also connect the D0 in the northern and central mountains with the D0 around the Arkansas valley (Fig. 9, black outline).